

# MATTEO RIONDATO

Curriculum vitae

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## EDUCATION

Ph.D. Computer Science, Brown University, 2014  
M.Sc. Computer Science, Brown University, 2010  
M.Sc. (Laurea Specialistica) Computer Engineering, University of Padua (Italy), 2009  
B.Sc. (Laurea) Information Engineering, University of Padua (Italy), 2007

## ACADEMIC APPOINTMENTS

2016– Visiting Assistant Professor, Department of Computer Science, Brown University  
2015 Postdoctoral Research Associate, Department of Computer Science, Brown University  
2014–15 Postdoctoral Researcher, Department of Computer Science, Stanford University

## INDUSTRY POSITIONS

2015– Research Scientist, Labs, Two Sigma Investments  
2013 Summer Intern Research Scientist, Web Mining Group, Yahoo Research Barcelona

## PUBLICATIONS

\*: equal participation by all authors

### Journal Articles

forthcoming **M. Riondato**, David García-Soriano, and F. Bonchi. Graph Summarization with Quality Guarantees. *Data Mining and Knowledge Discovery*

- 2015 **M. Riondato** and E. M. Kornaropoulos. Fast Approximation of Betweenness Centrality through Sampling. *Data Mining and Knowledge Discovery*, 30(2):438–475
- 2014 **M. Riondato** and E. Upfal. Efficient Discovery of Association Rules and Frequent Itemsets through Sampling with Tight Performance Guarantees. *ACM Transactions on Knowledge Discovery from Data*, 8(4):20:1–20:32
- 2010 \* A. Pietracaprina, **M. Riondato**, E. Upfal, and F. Vandin. Mining Top-k Frequent Itemsets through Progressive Sampling. *Data Mining and Knowledge Discovery*, 21(2):310–326

### Conference Proceedings

- forthcoming \* F. Bonchi, G. De Francisci Morales, **M. Riondato**, Centrality Measures on Big Graphs: Exact, Approximated, and Distributed Algorithms. To appear in *Proceedings of the 25<sup>th</sup> International World Wide Web Conference (WWW)*
- 2016 A. Mahmoody, **M. Riondato**, and E. Upfal. Wiggins: Detecting Valuable Information in Dynamic Networks with Limited Resources. *Proceedings of the 9<sup>th</sup> ACM International Conference on Web Search and Data Mining (WSDM)*, pp. 677–686
- 2015 **M. Riondato** and E. Upfal. Mining Frequent Itemsets through Progressive Sampling with Rademacher Averages. *Proceedings of the 21<sup>st</sup> ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 1005–1014
- 2015 **M. Riondato** and E. Upfal. VC-Dimension and Rademacher Averages: From Statistical Learning Theory to Sampling Algorithms. *Proceedings of the 21<sup>st</sup> ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 2321–2322
- 2015 \* A. Anagnostopoulos, L. Becchetti, A. Fazzzone, I. Mele, and **M. Riondato**. The Importance of Being Experts: Efficient Max-Finding in Crowdsourcing. *Proceedings of the 36<sup>th</sup> ACM SIGMOD International Conference on Management of Data (SIGMOD)*, pp. 983–998
- 2014 **M. Riondato**, D. García-Soriano, and F. Bonchi. Graph Summarization with Quality Guarantees. *Proceedings of the 14<sup>th</sup> IEEE International Conference on Data Mining (ICDM)*, pp. 947–952
- 2014 **M. Riondato**. Sampling-based Data Mining Algorithms: Modern Techniques and Case Studies. *Proceedings of the European Conference on Machine Learning and Principle and Practice of Knowledge Discovery in Databases (ECML PKDD)*, pp. 516–519

- 2014 **M. Riondato** and F. Vandin. Finding the True Frequent Itemsets. *Proceedings of the 14<sup>th</sup> SIAM International Conference on Data Mining (SDM)*, pp. 497–505
- 2014 **M. Riondato** and E. M. Kornaropoulos. Fast Approximation of Betweenness Centrality through Sampling. *Proceedings of the 7<sup>th</sup> ACM International Conference on Web Search and Data Mining (WSDM)*, pp. 413–422
- 2012 **M. Riondato**, J. A. DeBrabant, R. Fonseca, and E. Upfal. PARMA: A Parallel Randomized Algorithm for Association Rules Mining in MapReduce. *Proceedings of the 21<sup>st</sup> ACM International Conference on Information and Knowledge Management (CIKM)*, pp. 85–94
- 2012 **M. Riondato** and E. Upfal. Efficient Discovery of Association Rules and Frequent Itemsets through Sampling with Tight Performance Guarantees. *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, pp. 25–41
- 2012 \* A. Pietracaprina, G. Pucci, **M. Riondato**, F. Silvestri, and E. Upfal. Space-round Tradeoffs for MapReduce Computations. *Proceedings of the 26<sup>th</sup> ACM International Conference on Supercomputing (ICS)*, pp. 235–244
- 2012 M. Akdere, U. Çetintemel, **M. Riondato**, E. Upfal, and S. B. Zdonik. Learning-based Query Performance Modeling and Prediction. *Proceedings of the 28<sup>th</sup> IEEE International Conference on Data Engineering (ICDE)*, pp. 390–401
- 2011 **M. Riondato**, M. Akdere, U. Çetintemel, S. B. Zdonik, and E. Upfal. The VC-dimension of SQL Queries and Selectivity Estimation through Sampling. *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, pp. 661–676
- 2011 M. Akdere, U. Çetintemel, **M. Riondato**, E. Upfal, and S. B. Zdonik. The Case for Predictive Database Systems: Opportunities and Challenges. *Proceedings of the 5<sup>th</sup> Biennial Conference on Innovative Data System Research (CIDR)*, pp. 167–174

## In submission

- L. De Stefani, A. Epasto, **M. Riondato**, and E. Upfal. TRIÉST: Counting Local and Global Triangles in Fully-dynamic Streams with Fixed Memory Size.
- M. Riondato** and E. Upfal. ABRA: Approximating Betweenness Centrality in Static and Dynamic Graphs with Rademacher Averages.

## Tutorials

- 2016 \* F. Bonchi, G. De Francisci Morales, **M. Riondato**. Centrality Measures in Big Graphs: Exact, Approximated, and Distributed Algorithms. WWW’16

- 2015      **M. Riondato** and E. Upfal. VC-Dimension and Rademacher Averages: From Statistical Learning Theory to Sampling Algorithms. ACM KDD'15, ECML PKDD'15, ACM CIKM'15

## **AWARDS**

- 2014    Invited to present at the “Data Mining: Beyond the Horizon” workshop  
2014    Nominated for the ACM SIGKDD Doctoral Dissertation Award  
2014    SIAM International Conference on Data Mining Best Student Poster Award

## **GRANTS AND FELLOWSHIPS**

- 2015    SIAM/NSF Early Career Travel Award to SIAM Intl. Conference on Data Mining  
2014    SIAM Travel Award to SIAM Intl. Conference on Data Mining  
2014    Brown University Dissertation Fellowship  
2013    Yahoo Research Barcelona Summer Internship  
2011    Italy MIUR Research Fellowship  
2009    Brown University Graduate Fellowship

## **INVITED TALKS**

- 2015    Data is..., Stevens Institute of Technology, Hoboken (NJ, USA), December 12  
2015    Travel Pictures from Another World: Statistical Learning Theory Meets Data Mining, Monash University, Melbourne (Australia), October 28  
2015    Modern Sampling for Modern Data: The Case of Frequent Itemsets Mining, Two Sigma Investments, New York (NY, USA), March 5  
2014    Statistical Learning and Data Mining: A Lasting Marriage, Data Mining: Beyond The Horizon Workshop, University of Bristol, Bristol (UK), November 20  
2014    Efficient Frequent Itemsets Mining through Sampling, Database Research Group Seminar, University of Waterloo, Waterloo (Canada), May 7  
2014    Efficient Frequent Itemsets Mining through Sampling, Database Group Seminar, MIT CSAIL, Boston (MA, USA), April 10  
2014    Taming the Challenges of Big Data with Statistical Data Analytics, Department of

- Computer Science, Boston College, Boston (MA, USA), February 7
- 2013 Fast Betweenness Estimation through Sampling, Data Management Group Seminar, Boston University, Boston (MA, USA), October 17
- 2013 Fast Betweenness Estimation through Sampling, Lab Research Seminar, Yahoo! Labs Barcelona, Barcelona (Spain), June 13
- 2013 Fast Betweenness Estimation through Sampling, Advanced Computing Group Talk, University of Padua, Padua (Italy), May 30
- 2013 Statistical Learning Theory meets Knowledge Discovery, Brown CS Industrial Partners Program Symposium, Providence (RI, USA), April 25
- 2011 Statistical Learning Theory meets Databases, Advanced Computing Group Talk, University of Padua, Padua (Italy), June 24
- 2010 Top-k Frequent Itemsets Mining through Sampling, Advanced Computing Group Talk, University of Padua, Padua (Italy), September 16
- 2010 Mining Top-K Frequent Itemsets Through Progressive Sampling, Chalmers University of Technology, Gothenburg (Sweden), August 5

## **ADDITIONAL RESEARCH EXPERIENCE**

- 2012 Sapienza University of Rome (Rome, Italy) – Visiting Ph.D. Student, June–September
- 2011 University of Padua (Padua, Italy) – Research Fellow, June–September
- 2010 Chalmers University of Technology (Gothenburg, Sweden) – Visiting Ph.D. Student, August
- 2008–9 Brown University (Providence, RI, USA) – Visiting Student, October–June

## **TEACHING EXPERIENCE**

### **Brown University**

Optimization Methods in Finance – Instructor (spring 2016)

Probability and Computing – Teaching Assistant (fall 2010, spring 2012, spring 2013, spring 2014)

## **SERVICE TO THE SCIENTIFIC COMMUNITY**

### **Program Committees**

Grace Hopper'16

ECML PKDD'16

ACM KDD'16

WWW'16

ACM CIKM'15

ACM KDD'15

ACM CIKM'14

### **Journal Reviewing**

*Data Mining and Knowledge Discovery (DMKD/DAMI)*

*Engineering Applications of Artificial Intelligence (EAAI)*

*Knowledge and Information Systems (KAIS)*

*IEEE Transactions on Knowledge and Data Engineering (TKDE)*

*IEEE Transactions on Network Science and Engineering (TNSE)*

*IEEE Transactions on Parallel and Distributed Systems (TPDS)*

*IEEE Transactions on Services Computing (TSC)*

*VLDB Journal (VLDBJ)*

### **Conference Reviewing**

ECML PKDD'16, ACM KDD'16, WWW'16, ACM WSDM'16, ACM CIKM'15, ACM KDD'15, ISAAC'15, SIAM SDM'15, IEEE ICDE'15, ACM CIKM'14, DISC'14, ACM WSDM'14, WWW'14, ICALP'14, IEEE BigData'13, MFCS'13, ACM WSDM'13, IEEE IPDPS'12, ACM ICS'12, RANDOM'11

### **Conference Research Session Chair**

WWW'16 (Social Networks and Graph Analysis 1)

ACM KDD'15 (Social and Graphs 4)

## **Grant Reviewing**

Sigma Delta Epsilon (Graduate Women in Science) National Fellowship

## **DEPARTMENTAL / UNIVERSITY SERVICE**

Brown University Graduate Council – Student Representative, 9/2011 – 9/2013

Brown University Graduate Student Council – President, 4/2011 – 12/2012

Brown University Strategic Planning Committee on Doctoral Education – Student Representative, 9/2012 – 5/2013

Brown University New Scientist Program Graduate–Undergraduate Mentoring Initiative – Graduate Mentor, 9/2013 – 5/2014

## **ADDITIONAL TRAINING**

2014 Brown University Harriet W. Sheridan Center for Teaching and Learning  
Teaching Certificate I: Reflective Teaching

2012 Summer School on Massive Data Mining, IT University, Copenhagen, Denmark

## **PROFESSIONAL MEMBERSHIPS**

Association for Computing Machinery (ACM), 2012-present  
Special Interest Group on Knowledge Discovery from Data (SIGKDD)  
Special Interest Group on Management of Data (SIGMOD)  
Special Interest Group on Algorithms and Computation Theory (SIGACT)

Institute of Electrical and Electronic Engineers (IEEE), 2012-present  
IEEE Computer Society

Society for Industrial and Applied Mathematics (SIAM), 2012-present  
SIAM Activity Group on Data Mining and Analytics (SIAG/DMA)

## **REFERENCES**

Eli Upfal, Professor  
Brown University, Department of Computer Science  
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